Neurology Choosing Wisely recommendations

74 and growing

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Abstract

To increase neurologist awareness and inform future efficiency efforts, we identified all neurology-related Choosing Wisely items. Items were categorized by neurologic specialty, disease/symptom, and test/treatment. Of 370 items provided by 65 medical societies, 74 (20%) items were relevant to neurologists. Twelve were duplicated by multiple societies. Items pertaining to 10 neurologic subspecialties were identified, but none for movement disorders and neuromuscular disease. While many recommendations question the use of imaging, few address other high-cost neurologic tests such as EMG/nerve conduction studies and EEG. A rapidly growing number of neurology-related Choosing Wisely recommendations exist including areas of consensus and areas with few recommendations despite high costs. Consensus items should be prioritized for near-term interventions, while areas with few recommendations represent opportunities for future research.

Neurol Clin Pract 2015;5:439-447

Since 2012, the Choosing Wisely initiative has tasked medical specialty societies to identify tests and treatments that are commonly used by their physicians and whose necessity should be questioned (<http://www.choosingwisely.org>). Over 60 societies have created top 5 lists of these medical services, with the goal of enhancing patient and physician communication to limit these potentially unnecessary tests and treatments. The American Academy of Neurology (AAN) developed a top 5 list in 2013, and is in the process of creating a second top 5 list.¹ While the AAN is the only neurology specialty society to

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Funding information and disclosures are provided at the end of the article. Full disclosure form information provided by the authors is available with the **full text of this article at Neurology.org/cp**.

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Table Choosing Wisely initiatives relevant for neurologists²

American Academy of Neurology

1. Do not perform EEG for headaches.
2. Do not perform imaging of the carotid arteries for simple syncope without other neurologic symptoms.
3. Do not use opioid or butalbital treatment for migraine except as a last resort.
4. Do not prescribe interferon- β or glatiramer acetate to patients with disability from progressive, nonrelapsing forms of multiple sclerosis.
5. Do not recommend carotid endarterectomy for asymptomatic carotid stenosis unless the complication rate is low (<3%).

Imaging for low back pain

6. Do not do imaging for low back pain within the first 6 weeks, unless red flags are present.
7. Do not obtain imaging (plain radiographs, MRI, CT, or other advanced imaging) of the spine in patients with nonspecific acute low back pain and without red flags.
8. Do not obtain imaging studies in patients with nonspecific low back pain.
9. Do not recommend advanced imaging (e.g., MRI) of the spine within the first 6 weeks in patients with nonspecific acute low back pain in the absence of red flags.
10. Avoid imaging studies (MRI, CT, or X-rays) for acute low back pain without specific indications.
11. Do not initially obtain X-rays for injured workers with acute nonspecific low back pain.
12. Do not order an imaging study for back pain without performing a thorough physical examination.
13. Avoid lumbar spine imaging in the emergency department for adults with nontraumatic back pain unless the patient has severe or progressive neurologic deficits or is suspected of having a serious underlying condition (such as vertebral infection, cauda equine syndrome, or cancer with bony metastasis).

CT scans for minor head injury/syncope

14. Avoid CT scans of the head in emergency department patients with minor head injury who are at low risk based on validated decision rules.
15. Do not routinely obtain CT scanning of children with mild head injuries.
16. CT scans are not necessary in the immediate evaluation of minor head injuries; clinical observation/Pediatric Emergency Care Applied Research Network criteria should be used to determine whether imaging is indicated.
17. Avoid CT of the head in asymptomatic adult patients in the emergency department with syncope, insignificant trauma, and a normal neurologic evaluation.
18. In the evaluation of simple syncope and a normal neurologic examination, do not obtain brain imaging studies (CT or MRI).

Medications for insomnia

19. Do not use benzodiazepines or other sedative-hypnotics in older adults as first choice for insomnia, agitation, or delirium.
20. Avoid use of hypnotics as primary therapy for chronic insomnia in adults; instead offer cognitive-behavioral therapy, and reserve medication for adjunctive treatment when necessary.
21. Do not prescribe medication to treat childhood insomnia, which usually arises from parent-child interactions and responds to behavioral intervention.
22. Do not routinely prescribe antipsychotic medications as a first-line intervention for insomnia in adults.

Antipsychotics for behavioral symptoms

23. Do not use antipsychotics as first choice to treat behavioral and psychological symptoms of dementia.
24. Do not prescribe antipsychotic medications for behavioral and psychological symptoms of dementia in individuals with dementia without an assessment for an underlying cause of the behavior.
25. Do not use antipsychotics as first choice to treat behavioral and psychological symptoms of dementia.

Feeding tubes in dementia

26. Do not recommend percutaneous feeding tubes in patients with advanced dementia; instead, offer oral assisted feeding.
27. Do not recommend percutaneous feeding tubes in patients with advanced dementia; instead, offer oral assisted feeding.
28. Do not insert percutaneous feeding tubes in individuals with advanced dementia; instead, offer oral assisted feedings.

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Table Continued

Imaging for headache

29. Do not do imaging for uncomplicated headache.

30. Do not perform neuroimaging studies in patients with stable headaches that meet criteria for migraine.

Opioids for chronic noncancer pain

31. Do not prescribe opioid analgesics as first-line therapy to treat chronic noncancer pain.

32. Do not prescribe opioid analgesics as long-term therapy to treat chronic noncancer pain until the risks are considered and discussed with the patient.

Carotid imaging for asymptomatic patients

33. Avoid use of ultrasound for routine surveillance of carotid arteries in the asymptomatic healthy population at any time.

34. Do not screen for carotid artery stenosis in asymptomatic adult patients.

EMG for spine pain

35. Do not use EMG and nerve conduction studies to determine the cause of axial lumbar, thoracic, or cervical spine pain.

36. Do not order an EMG for low back pain unless there is leg pain or sciatica.

Polysomnogram for insomnia

37. Do not routinely order sleep studies (polysomnogram) to screen for/diagnose sleep disorders in workers with chronic fatigue/insomnia.

38. Avoid polysomnography in chronic insomnia patients unless symptoms suggest a comorbid sleep disorder.

Bed rest for low back pain

39. Do not prescribe bed rest for acute localized back pain without completing an evaluation.

40. Do not recommend bed rest for more than 48 hours when treating low back pain.

Autoantibody panels without positive ANA

41. Do not test ANA subserologies without a positive ANA and clinical suspicion of immune-mediated disease.

42. Do not order autoantibody panels without positive ANA and evidence of rheumatic disease.

Laboratory tests

43. Do not repeat a confirmed positive ANA in patients with established juvenile rheumatoid arthritis or systemic lupus erythematosus.

44. Do not test for Lyme disease as a cause of musculoskeletal symptoms without an exposure history and appropriate examination findings.

45. Do not test for thrombophilia in adult patients with venous thromboembolism occurring in the setting of major transient risk factors (surgery, trauma, or prolonged immobility).

Imaging

46. Do not routinely screen for brain aneurysms in asymptomatic patients without a family or personal history of brain aneurysms, subarachnoid hemorrhage, or genetic disorders that may predispose to aneurysm formation.

47. Neuroimaging (CT, MRI) is not necessary in a child with simple febrile seizure.

48. Do not routinely order imaging for all patients with double vision.

49. Avoid ordering a brain CT or brain MRI to evaluate an acute concussion unless there are progressive neurologic symptoms, focal neurologic findings on examination, or there is concern for a skull fracture.

50. Do not order CT scan of the head/brain for sudden hearing loss.

51. Do not perform CT imaging for headache when MRI is available, except in emergency settings.

52. Do not order low back X-rays as part of a routine preplacement medical examination.

53. Do not use PET imaging in the evaluation of patients with dementia unless the patient has been assessed by a specialist in this field.

54. Avoid transesophageal echocardiography to detect cardiac sources of embolization if a source has been identified and patient management will not change.

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Table Continued

55. Do not initiate routine evaluation of carotid artery disease prior to cardiac surgery in the absence of symptoms or other high-risk criteria.

Medications

56. Do not administer steroids after severe traumatic brain injury.

57. Do not routinely use seizure prophylaxis in patients following ischemic stroke.

58. Do not prescribe cholinesterase inhibitors for dementia without periodic assessment for perceived cognitive benefits and adverse gastrointestinal effects.

59. Do not prescribe opioid or butalbital-containing medications as first-line treatment for recurrent headache disorders.

60. Do not recommend prolonged or frequent use of over-the-counter pain medications for headache.

61. Do not routinely prescribe lipid-lowering medications in individuals with a limited life expectancy.

62. Do not prescribe opiates in acute disabling low back pain before evaluation and a trial of other alternatives is considered.

63. Do not prescribe opioids for treatment of chronic or acute pain for workers who perform safety-sensitive jobs such as operating motor vehicles, forklifts, cranes, or other heavy equipment.

Miscellaneous

64. Do not delay palliative care for a patient with serious illness who has physical, psychological, social, or spiritual distress because they are pursuing disease-directed treatment.

65. Avoid physical restraints to manage behavioral symptoms of hospitalized older adults with delirium (American Geriatrics Society).

66. Do not perform elective spinal injections without imaging guidance, unless contraindicated.

67. Do not continue life support for patients at high risk for death or severely impaired functional recovery without offering patients and their families the alternative of care focused entirely on comfort.

68. Do not order continuous telemetry monitoring outside of the intensive care unit without using a protocol that governs continuation.

69. Do not routinely add adjuvant whole-brain radiation therapy to stereotactic radiosurgery for limited brain metastases.

70. Do not use polysomnography to diagnose restless legs syndrome, except rarely when the clinical history is ambiguous and documentation of periodic leg movements is necessary.

71. Do not perform positive airway pressure retitration studies in asymptomatic, adherent sleep apnea patients with stable weight.

72. Do not order repeat epidural steroid injections without evaluating the individual's response to previous injections.

73. Do not recommend surgical deactivation of migraine trigger points outside of a clinical trial.

74. Do not routinely order low-osmolar or iso-osmolar radiocontrast media or pretreat with corticosteroids and antihistamines for patients with a history of seafood allergy who require radiocontrast media.

Abbreviation: ANA = antinuclear antibodies.

publish a list to date, many other societies have made recommendations that address clinical care provided by neurologists. Specialty societies are developing these lists at a rapid pace, with 9 societies contributing 45 items between September 2014 and February 2015.

The aim of this study was to identify all Choosing Wisely items pertinent to neurologists, make them easily accessible, and categorize them by neurologic subspecialty, disease/symptom, and test/treatment. Furthermore, we sought to highlight areas where recommendations are lacking and where consensus already exists to inform future development of top 5 lists.

METHODS

Two board-certified neurologists (BCC, LES) independently identified all Choosing Wisely items relevant to neurologists using the master list provided on the Choosing Wisely Web site (downloaded on February 19, 2015, from <http://www.choosingwisely.org/doctor-patient-lists/>). Disagreements were resolved via adjudication with a third neurologist (L.B.D.L.). Three neurologists (BCC, LES, LBD) then categorized the

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neurology-related items by neurologic specialty, disease/symptom, and test/treatment using group consensus. Items that were duplicated by multiple societies were also identified.

RESULTS

The Choosing Wisely master list contained a total of 370 items from 65 specialty societies. Of these 370 items, 74 recommendations (20%) from 30 different specialty societies were determined to address clinical activities performed by neurologists (table).²

Of the 74 neurology-related items, 5 were proposed by the AAN. Five other specialty societies also issued 5 neurology-related items including the American Academy of Sleep Medicine, American Academy of Physical Medicine and Rehabilitation, American Academy of Neurological Surgeons, American Geriatrics Society, and American Headache Society.

The neurologic subspecialties with the most items were general neurology ($n = 33$), followed by cognitive ($n = 10$), stroke ($n = 10$), and headache ($n = 8$) disciplines (figure 1). Of note, no items were identified in the fields of movement disorders or neuromuscular disease, and only one item each pertaining to epilepsy and multiple sclerosis (MS). The neurologic diseases/symptoms with the most items were low back pain ($n = 15$), dementia/delirium ($n = 10$), headache ($n = 8$), concussion/traumatic brain injury ($n = 6$), and stroke ($n = 5$) (figure 2A). The tests/treatments with the most items were imaging ($n = 28$), opioids ($n = 6$), antipsychotics ($n = 4$), and polysomnogram (PSG) ($n = 4$) (figure 2B). Only one item was found for EEG, antiepileptic drugs (AEDs), and MS medications. The only EEG item was for patients with headache, and the only AED recommendation was to question prophylactic use in

Figure 1 Choosing Wisely items by neurologic specialty

The number of Choosing Wisely items categorized by neurologic specialty. N-Oph = neuro-ophthalmology; N-Oto = neuro-otology.

Neuroimaging for headache and low back pain are ideal intervention candidates as multiple societies and guidelines have recommended against their use.

ischemic stroke patients. Only 2 items addressed electrodiagnostic tests (EMG/nerve conduction studies [NCS]) and both addressed their use in patients with spine pain.

Topics that were duplicated by multiple societies included recommendations to question imaging in patients with low back pain ($n = 8$), CT scans for mild head injury ($n = 4$), medications for insomnia ($n = 4$), placement of feeding tubes in patients with dementia ($n = 3$), antipsychotics for behavioral control in patients with dementia ($n = 3$), imaging in patients with uncomplicated or migraine headache ($n = 2$), opioids for chronic noncancer pain ($n = 2$), carotid imaging for asymptomatic patients ($n = 2$), EMG/NCS for spine pain ($n = 2$), PSG for insomnia ($n = 2$), CT scans for syncope ($n = 2$), bed rest for low back pain ($n = 2$), and autoantibody panels without a positive antinuclear antibody ($n = 2$) (table).

DISCUSSION

While the AAN established one top 5 Choosing Wisely list, 69 additional neurology-relevant recommendations have been proposed by other medical specialty societies. Of all the Choosing Wisely items, 1 in 5 addressed clinical activities performed by neurologists, but only 7% were issued by a neurology society. Knowledge of these recommendations is important in delivering efficient neurologic care and should be used to jumpstart patient and physician communication regarding the need for these tests and treatments.

Interestingly, 12 Choosing Wisely neurology-relevant recommendations have been duplicated by multiple specialty societies. These likely represent a consensus among the medical community that they are commonly ordered medical services of low value. For these consensus recommendations, such as not imaging patients with low back pain, now is the time to concentrate our efforts on interventions designed to reduce these unnecessary tests. Furthermore, future Choosing Wisely recommendations, like the second top 5 list from the AAN, will have to balance the importance of establishing new consensus recommendations with exploring new medical tests and treatments to target.

We also found multiple areas that have not received attention. No current Choosing Wisely items pertain to the neurologic subspecialties of movement disorders and neuromuscular diseases and only one item each pertains to epilepsy and MS. An opportunity exists to identify commonly performed tests and treatments of questionable benefit in these subspecialties. Furthermore, prior research shows that the tests with the highest aggregate costs in outpatient neurology are MRI, EMG/NCS, and EEG.³ While many Choosing Wisely recommendations call into question MRI use in several common clinical scenarios, such as low back pain and headache, only one item pertaining to EEG and only one unique item involving EMG/NCS were identified. Given that these tests have large costs associated with them, EEG and EMG/NCS should be the focus of future efforts to identify neurology efficiency targets. In the United States, we currently spend more money on neurologist-ordered MRIs than on reimbursement for neurology visits.³ Moreover, neurologist-ordered EMG/NCS and EEGs combined account for more than half of the money spent on neurology visit reimbursement. By continuing to rely on expensive tests, our specialty runs the risk of devaluing our most important value to patients and the medical community, namely seeing patients in clinic and managing their care. Providing efficient neurologic care is likely to be particularly relevant

Figure 2 Choosing Wisely items by neurologic disease/symptom and test/treatment

The number of Choosing Wisely items categorized by neurologic disease/symptom (A) and test/treatment (B). AED = antiepileptic drugs; CEA = carotid endarterectomy; MS = multiple sclerosis; OSA = obstructive sleep apnea; PSG = polysomnogram; RLS = restless leg syndrome; TBI = traumatic brain injury.

to neurologist compensation as health care reimbursement changes from volume to value-based systems such as accountable care organizations and medical homes.

It is unlikely that the Choosing Wisely lists will meaningfully affect care without additional dissemination and implementation interventions. Interventions could focus on patients, providers, payers, or a combination; however, specific interventions known to reduce overutilization are limited and should be a focus of future research efforts. Prioritizing which Choosing Wisely items to intervene upon requires consideration of cost.⁴ Few data exist to give precise cost estimates for these services in the clinical contexts where their value is questioned. Recently, we estimated that approximately \$1 billion per year is spent on neuroimaging for outpatients for headache in the United States.^{5,6} A separate group found similar neuroimaging utilization in headaches.⁷ Likewise, high and rising neuroimaging utilization has been reported for patients with low back pain with high resulting costs.^{8,9} Neuroimaging for headache and low back pain are ideal intervention candidates as multiple societies and guidelines have recommended against their use and the costs of guideline discordant care are known to be high.^{10,11} Future studies are needed to probe the costs of the other 64 items, and cost estimates should be provided with all future Choosing Wisely items.

With an ever-growing number of specialty societies developing Top 5 lists, finding neurology-relevant items is becoming increasingly challenging. We plan to add these 74 items categorized by neurologic subspecialty, disease/symptom, and test/treatment to the AAN Web site (<https://www.aan.com/practice/choosing-wisely/>), and update it annually. Neurologists from all subspecialties will be able to quickly review the items most pertinent to their patients and practice. While 74 neurology-related Choosing Wisely items is a great start, future efforts should focus on identifying new targets and designing interventions to reduce utilization of currently identified tests and treatments.

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AUTHOR CONTRIBUTIONS

Dr. Callaghan was involved in the study design, data acquisition, planning and interpretation of the data, and wrote the manuscript. Dr. Kerber contributed to the study design, interpretation of the data, and critical revisions of the manuscript. Dr. Burke contributed to interpretation of the data and critical revisions of the manuscript. Drs. De Lott and Skolarus contributed to data acquisition, interpretation of the statistical analysis, and critical review of the manuscript.

STUDY FUNDING

Dr. Callaghan is supported by the Katherine Rayner Program, the Taubman Medical Institute, and NIH K23 NS079417. Dr. De Lott is supported by NIH/National Institute of Neurological Disorders and Stroke T32NS7222. Dr. Kerber is supported by NIH/NCRR K23 RR024009, AHRQ R18 HS017690, and 1R01DC012760. Dr. Burke is supported by National Institute of Neurological Disorders and Stroke K08 NS082597. Dr. Skolarus is supported by NIH/National Institute of Neurological Disorders and Stroke K23NS073685.

DISCLOSURES

B.C. Callaghan serves as consultant and scientific advisory board member for a Patient-Centered Outcomes Research Institute grant; has received honoraria from the *British Medical Journal*; has received funding for travel from the American Academy of Neurology and World Federation of Neurology; certifies ALS centers for the ALS Association and performs medical consultations for Advance Medical; and receives research support from Impeto Medical Inc. and NIH. L.B. De Lott receives research support from NIH and has served as a consultant in medico-legal cases. K.A. Kerber has received

author honoraria from Elsevier Inc., and funding for travel from the AAN; receives publishing royalties for *Clinical Neurophysiology of the Vestibular System*, 4th edition (Oxford University Press, 2011); serves as a consultant for AAN, University of California San Francisco (including work on a project funded by AstraZeneca), and Best Doctors, Inc.; has received a loan repayment award from NIH and speaker honoraria from AAN and University of Southern California; receives research support from NIH/NIDCD and AHRQ; and has reviewed records in medico-legal cases. J.F. Burke has received honoraria from the AAN for contributing to the *Continuum* series; has received compensation from AstraZeneca for his role as an adjudicator in the SOCRATES trial; has received research support from NIH; and has reviewed case materials in a medical malpractice defense case. L.E. Skolarus has received hotel accommodations from American Neurological Association and the AAN and funding for travel from the Association of University Professors of Neurology and receives research support from NIH/National Institute of Neurological Disorders and Stroke, Blue Cross Blue Shield of Michigan Foundation, and institutional support from the University of Michigan for stroke-related research. Full disclosure form information provided by the authors is available with the **full text of this article at Neurology.org/cp**.

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